

Peaceful Nuclear Cooperation

U.S. Support for NPT Article IV

UNITED STATES & GHANA

Through the International Atomic Energy Agency (IAEA), the United States contributes to the work of many countries using nuclear materials and technology for peaceful purposes. In recent years, U.S. support has focused on achieving tangible and lasting benefits in fields that are vital to human development, including agriculture, human health, water resource management, and human resource development. Since 2000, the IAEA has approved and funded \$5,020,105, including \$317,757 in 2013, under its Technical Cooperation (TC) program for projects in Ghana.



The United States views its support for the peaceful uses of nuclear energy as a critical part of its efforts to strengthen the IAEA and the global nuclear nonproliferation regime. About 25% of the IAEA's annual budget for peaceful nuclear assistance comes from the U.S. In 2012, the U.S. contributed almost \$22 million to the Technical Cooperation Fund and over \$6 million in additional funding for training, fellowships, and cost-free experts.

In addition to these longstanding contributions to the IAEA's peaceful uses programs, at the 2010 NPT Review Conference, the U.S. announced a \$100 million Initiative to further expand this support over the next five years. The U.S. pledged \$50 million towards the IAEA's Peaceful Uses Initiative (PUI), focusing on human health, food security, water resource management, and nuclear power infrastructure development. The U.S. has already allocated over \$27 million to specific PUI projects, and welcomes the contributions of Japan, the Republic of Korea, New Zealand, the Czech Republic, Hungary, Sweden, Australia, France, Indonesia, Brazil, Italy, the UK and Kazakhstan to this important Initiative.

NUCLEAR ENERGY

The need for electricity, economic competitiveness and environmental considerations have increasingly led a large number of Member States to consider nuclear power as an energy development option and seek assistance from the IAEA. Ghana is currently

participating in a regional TC project sponsored by the United States to increase awareness of the requirements and challenges related to the feasibility of nuclear power programs. The project addresses regional priorities and concerns related to nuclear energy, including the requirements for conducting comprehensive studies to explore the feasibility of nuclear power, developing nuclear safety frameworks, and promoting regional cooperation and common understanding about major nuclear power issues, such as nuclear material, radioactive waste management, legal and safety obligations, human and financial resources, and reliable technologies.

Surging interest in nuclear energy has also created new challenges for those African countries with uranium resources and other radioactive ores as many lack appropriate legislative frameworks for regulating activities related to uranium exploration and exploitation in order to protect their interests, the environment and the public at large. Ghana is currently participating in a regional TC project sponsored by the United States to strengthen participating Member States' capabilities for effective and efficient management of uranium resources and other radioactive ores, as well as to build the legislative framework to effectively regulate related activities.

NUCLEAR SAFETY

The use of nuclear technology has great potential to shape the future of developing countries, but is not without risk. In recognition of this, Ghana recently participated in a regional TC project funded by the United States to strengthen national regulatory infrastructures for the control of radiation sources. Ghana currently participates in another regional TC project, also funded by the U.S., to

1. *International radiation measurement exercise. Credit: Dean Calma/IAEA*
2. *Deep wells and diesel pumps are the water lifeline for many rural residents. Credit: David Kinley III/IAEA*
3. *Nuclear techniques can make cocoa trees resistant to a virus that kills millions each year. Credit: David Kinley III/IAEA*

maintain these regulatory infrastructures and enhance their effectiveness and sustainability.

Self-assessment and regional networking can also significantly contribute to strengthening national regulatory infrastructures, so Ghana is currently participating in a regional TC project sponsored by the United States to improve the performance of regulatory systems and conform to the requirements of international standards through self-assessment and enhanced regional cooperation. Ghana is also extending its cooperation by participating in an interregional TC project sponsored by the United States to strengthen cradle-to-grave control of radioactive sources in the Mediterranean region.

Through additional U.S.-sponsored regional TC projects, Ghana is also currently working to strengthen occupational radiation protection, radiation protection of patients during medical exposure, as well as control of public exposures.

EMERGENCY MANAGEMENT

Radiation emergencies not only risk injury to individuals, but can also contaminate large territories and affect the living conditions of communities. Ghana is currently participating in a regional TC project sponsored by the United States to strengthen participating countries' national arrangements for response to radiological and nuclear emergencies and improve their compliance with international standards.

HUMAN HEALTH

While radiotherapy is a well-known nuclear technology used for cancer treatment, the lack of adequate human resources in many centers in the African region negatively affects the accessibility and quality of care available for cancer patients. Ghana is currently participating in a regional TC project sponsored by the United States to determine the number of professionals working in each country, assess and improve existing training

programs, and establish training programs in countries where they don't exist.

Additionally, one of the greatest challenges developing countries face in fighting cancer is devising plans for building cancer control capacity. In recognition of this, the IAEA's Programme of Action for Cancer Therapy (PACT) has developed PACT Model Demonstration Sites (PMDS) in eight Member States, including Ghana. These sites, supported with contributions from the United States, aim to demonstrate the effectiveness of evidence-based strategies and the benefits of synergic partnerships for the advancement of comprehensive cancer capacity building. The PMDS benefit from provision of radiation medicine equipment, expert missions, and additional cancer control capacity building activities.

AGRICULTURE

In addition to land degradation, many regions in Africa are also vulnerable to climatic variability and frequent droughts. In such context, the introduction and adaptation of irrigation is a key factor for increasing crop production, reducing vulnerability to food deficits and contributing to income generation for resource-poor farmers. Nuclear and isotopic techniques can offer the ability to unravel interactions between water, soil, and applied and existing nutrient pools, providing great insight into the productivity and effectiveness of various irrigation systems.

Ghana is therefore currently participating in a regional project sponsored by the United States to develop and pilot test appropriate irrigation systems, methods and related water-nutrient management practices for small-scale farmers in order to increase yield, quality of crops and income.

WATER RESOURCES

The sustainability of groundwater resources for drinking water supplies, agriculture, and industry is a prime

concern for some countries, particularly those dominated by arid and semi-arid climates. Ghana is therefore participating in a regional TC project sponsored by the United States to promote the integrated management and sustainable development of the shared groundwater resources in the Sahel region.

HUMAN RESOURCES

To contribute to the manpower development of Member States' nuclear programs, the IAEA awards individual fellowships and organizes group training courses. Since 2000, the United States has hosted multiple training courses that included Ghanaian participants in fields such as decommissioning, research reactors, nuclear safety and security, isotope hydrology, quality assurance in radiotherapy, and introducing and expanding nuclear power programs. Training was also provided through the IAEA Fellowship Program to 12 Ghanaians, six of which were sponsored by the United States, in fields including nuclear knowledge management, radiation protection, radioactive waste, plant breeding and genetics, radioanalytical techniques and micronutrients in nutrition.

Additionally, since 2000, eight U.S. experts have traveled to Ghana to collaborate through various IAEA Technical Cooperation projects. Topics included quality management, groundwater assessment, design, and safety.



Delivering water to neighbors by pushing makeshift carts. Credit: Juanita Perez-Vargas/ IAEA

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